



Australian Health Information Council

Electronic Decision Support Systems Report - 2008

Foreword

Electronic Decision Support was identified as a key area of importance for the Australian Health Information Council (AHIC) and as a result was the focus for the Council during its second term.

AHIC members identified the use and accreditation of EDSS; and medicines as being two important areas of Electronic Decision Support Systems (EDSS) for discussion. Several experts in the field, including Professor Johanna Westbrook, Dr Joanne Callen, Dr John Aloizos, Mr Michael Fitzsimons and Dr James Reeve provided valuable input into this report and I thank them for their participation.

Barriers to the successful implementation of EDSS have been identified and overcoming these barriers to maximise the benefits for health consumers has been discussed.

On behalf of AHIC, I hope that the development of this paper assists with advancing Electronic Decision Support Systems in Australia and as such can contribute to the use of safe, efficient and effective tools to support the skills and knowledge of health professionals across Australia.

I would like to take this opportunity to thank the members of the Council and the AHIC Executive for their valuable work and support in formulating this advice to AHMAC.



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Mr Michael Fitzsimons from Medicines Australia, Professor Johanna Westbrook and Dr Joanne Callen from the Australian College of Health Informatics, Dr John Aloizos from the Australian Pharmaceutical Advisory Council and Dr James Reeve from the National Prescribing Service. We are grateful for the expertise these co-opted members were able to contribute.

Dr Norman Swan, Ms Karen Carey and Ms Christine Gunson of Norman Swan Medical Communications for developing a Literature Overview and preparatory work on EDSS for AHIC's consideration.

Notes for readers

In reading this document please be aware of the following points:

1. **'National'** in the context of this report refers to the cross-jurisdictional (Australian and state and territory governments and other agencies, public and private) and cross-sectoral health information management and information and communications technology (IM & ICT) agenda and priorities that require coordination. It is the agenda for which the National E-Health and Information Principal Committee (NEHIPC) currently has responsibility.
2. We have drawn heavily on existing knowledge and expertise in many health IM&ICT areas. As far as possible, we have tried to avoid reinventing the wheel. In fact, this is one of AHIC's key messages AHIC for consideration in relation to the next steps for EDSS.
3. This report of EDSS in Australia has been structured to provide a brief overview of EDSS definitions and benefits together with identifying the current situation in Australia before an analysis of the key messages is provided. This approach has been taken to provide a broad range of readers with the context of EDSS and demonstrates that EDSS is an essential component of an Australian National E-Health Strategy.

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1. Executive Summary

AHIC has recommended that a number of key messages and guiding principles be considered about the importance of further development of EDSS to assist in moving national health information forward. The key messages include:

- That the continued support for the development of a National E-Health Strategy will drive national collaboration and provide the context to discuss important issues such as EDSS.
- There needs to be recognition of the critical role that EDSS has in the National E-Health Strategy and associated implementation plan.
- Users must be involved in the development of any EDSS implementation so that EDSS requirements support the user.
- That EDSS must support effective consumer self-management and optimise health outcomes. Consumers have been very effective in driving change and improvement in the quality of services and they must be part of the team in the future development of EDSS.
- That a national governance and regulatory structure needs to be further considered for EDSS and that as part of this structure, EDSS should be considered for future accreditation standards across the continuum of care.
- That the health workforce be supported so that they are confident and skilled in the use of a range of eHealth initiatives, including EDSS.
- There is a need to work with the peak professional organisations to identify barriers and create incentives that will maximise uptake of EDSS.
- That we already have a good foundation nationally and can also learn from international experience for progressing a coordinated and regulated EDSS in Australia.

2. Background

The AHIC is a multidisciplinary expert group that was appointed by Health Ministers in 2003 to provide advice to the Australian Health Ministers via the Australian Health Ministers Advisory Council (AHMAC) on information management and communications technology development in the health sector from the end-user perspective.

During its second term the AHIC's role was to provide independent strategic advice on how Information Management and Information and Communications Technology (IM&ICT) effort can be harnessed to address current and future needs in health care delivery, management and planning and to identify emerging trends and opportunities. The AHIC works in conjunction with the National E-Health and Information Principal Committee (NEHIPC).

In its 2007 Strategic Work Plan, the AHIC identified the topic of Electronic Decision Support Systems (EDSS) as being an important issue for further consideration. In considering how this might be progressed, AHIC members recommended that two important areas of EDSS be the initial focus of their investigative efforts:

1. EDSS with a particular focus on Medicines; and
2. The use and accreditation of EDSS.

Two Editorial Groups were convened to support AHIC's work on EDSS with external expert stakeholders invited to participate in formulating this advice. Representatives from Medicines Australia, the National Prescribing Service, the Australian College of Health Informatics and the Australian Pharmaceutical Advisory Council were members of the Editorial Groups and contributed to the development of this information.

2.1 Roles and Responsibility of AHIC

During its second term, AHIC provided advice to the AHMAC in consultation with the National E-Health and Information Principal Committee (NEHIPC), on long-term directions and national strategic reform issues and effective use of IM&ICT in the health sector. Responsibilities and key tasks included:

- Advising on how IM&ICT effort can be harnessed to address current and emerging needs in health care delivery, management and planning.
- Providing a coordinated, balanced perspective on major health IM&ICT issues.
- Building partnerships with the private health, IT sector and other industry sectors to promote the more effective and efficient use of IM&ICT in health.
- Promoting and advocating health IM&ICT, particularly in relation to other national reform initiatives such as the safety and quality agenda.
- Providing advice on appropriate mechanisms for stakeholder engagement.
- Strengthening relationships with IM&ICT stakeholders by developing key messages for clinicians, administrators, industry and consumers.
- Promoting information sharing.
- Monitoring the health environment to identify emerging trends and opportunities in relation to clinical practice, the organisation and delivery of health services, health outcomes and new technologies.
- Providing advice in relation to emerging issues, opportunities and risks for health – particularly from an end-user's perspective.
- Taking account of the NEHIPC work program, considering progress to date and providing advice on future needs for effort.

3. Definitions of Electronic Decision Support Systems

Electronic Decision Support Systems (EDSS) are one of the tools that technology provides to bring together the best evidence to assist and support health professionals to make evidence-based treatment decisions.

Decision support tools have existed for decades in the form of crib sheets, aide memoires, evidence summaries, formularies and hospital residents' handbooks. *Electronic* decision support systems are meant to utilise the benefits of information and communications technology allowing, among other things, speed, comprehensiveness, flexibility, a degree of 'intelligence', and ease of update.

There are various definitions for EDSS. In 2003, the National Electronic Decision Support Taskforce defined EDSS as "access to knowledge stored electronically to aid patients, carers and service providers in making decisions on health care". The Taskforce Report also explained:

"Electronic decision support systems have three main components: knowledge, rules, and software. Knowledge stored electronically includes published clinical practice guidelines, commercial databases, and custom-designed knowledge bases, based on expert opinion. Knowledge is translated into active rules used within the system. The software applies the knowledge, rules, and local patient and clinical data, and presents the electronic decision support functionality on the clinician's desktopⁱ."

EDSS range from simple passive tools that provide access to general knowledge to sophisticated active tools that interact with patient-specific data to generate case-specific advice. Active EDSS are those systems that provide support to the clinician, such as alerts and reminders. Active EDSS can include a pick list for different medication with associated ailments that change when patient specific data (i.e. weight, age and gender) is entered into the system.

Passive EDSS are those systems that require a clinician, consumer or other user to look up research data or information. Some examples include clinical guidelines, the Cochrane Review and journal articles that provide advice to support the skills and knowledge that a health professional has gained through experience and study.

4. The Benefits of EDSS

Health care is an information-intensive industry which still largely relies on paper-based records and limited and slow communication of information about a patient's condition and their treatment among providers and between providers and the patient.

It is generally accepted that by using the tools that technology provides, EDSS will have significant positive impact on health care outcomes, including:

- Smarter selection of tests and treatments;
- The reduction of mistakes in patient care due to lack of access to relevant knowledge;
- The improved utilisation of scarce health workforce;
- Improved coordination of care across the continuum of care, particularly for patients with chronic or complex conditions;
- Improved information to support national coordination of health policies and standards;
- Better targeted care initiatives across jurisdictions; and
- Greater clarity of data associated with government funded healthcare provision.

While the success can be difficult to quantify, the literature overwhelmingly demonstrates that many of these benefits are yet to be realised. Careful planning at the early stages of designing the National E-Health Strategy will be important for ensuring the success of EDSS in Australia.

5. The Current Situation; EDSS in Australia

The eHealth industry has progressed EDSS in Australia to varying degrees. Australia has a fairly high penetration of prescribing support that sits on a GP desktop. The Commonwealth has also funded some work around the Integrated Primary Care Programs for Asthma in partnership with the Pharmaceutical Alliance and the Central Bayside Division of General Practice.

There are also some good evidence based programs used in hospitals across jurisdictions. For example the Victorian Clinical Systems implementation through HealthSMART supports the decision making process for medication management by providing patient allergies and adverse reactions, enabling electronic prescribing with automatic checks for duplicates and interactions and enabling electronic medication records at admission and discharge. Victoria is collaborating with New South Wales in developing components of the electronic medication management capability and content for use in clinical systems.

While some jurisdictions are independently developing their own EDSS products and systems, what is missing are agreed national standards by which providers of EDSS adhere to specific technical specifications and benchmarks. This absence of agreed national standards means that EDSS in Australia is largely unregulated. This is a particular concern for AHIC as evidence provided through the literature overview identified that when implemented poorly, EDSS can in fact potentially cause harm to the patient.

What is needed to address this current situation is to provide the eHealth market with the tools and support to ensure that EDSS is safe, of high quality and an effective and efficient support to health professionals and consumers at the point of care delivery.

6. *AHIC's Key Messages to Progressing EDSS.*

AHIC has developed a number of key messages for the further development of a nationally coordinated and regulated EDSS in Australia, with the aim of improving health outcomes and limiting the risks of poorly designed and implemented EDSS.

6.1 *Support for the National E-Health Strategy*

AHIC members agree that the development of a National E-Health Strategy which is being coordinated by the National E-Health and Information Principal Committee (NEHIPC) on behalf of AHMAC is a critical piece of work. This strategy will drive national collaboration in agreed priority areas over the next 5-10 years and provides the essential leadership and strategic context in which issues such as EDSS can be considered.

Recommendation One:

AHIC recommends continued support for the development of a National E-Health Strategy.

6.2 *EDSS is an Essential Component of Designing a National E-Health Strategy*

AHIC members recommend that as part of a National E-Health Strategy and associated implementation plan, that the further development of EDSS in Australia is an important component of this work in order to provide Australia with a comprehensive eHealth system.

To date, EDSS has been considered by some to be dependent on the successful implementation of the Individual Electronic Health Record (IEHR). It is important to note however that IEHR and EDSS are two separate but essential components. While some jurisdictions are progressing EDSS through medication management systems for the acute sector, EDSS needs to be a national priority in this direction setting process to ensure the rapid uptake of safe and effective tools to support decision making by clinicians and consumers.

EDSS for medication management and IEHR both build upon a common base (the medication record) and therefore will need to be linked and interoperable in order to progress the national health information program. Health professionals and consumers need to consider them as equally important and they must be moved forward in parallel.

The careful planning for the implementation of EDSS and IEHR including how they will interact will need to be undertaken early, at the design stage of the National E-Health Strategy. If this careful planning does not occur, it may be more expensive and more difficult to add components at a later stage. AHIC considers that if Australia fails to plan for EDSS as part of the National E-Health Strategy, then there will be a failure to realise the benefits of a safe and effective comprehensive eHealth system.

Recommendation Two:

AHIC recommends that the critical role of EDSS needs to be recognised in the National E-Health Strategy and associated implementation plan.

6.3 We Need Nationally Coordinated Governance of EDSS in Australia

6.3.1 Strengthening National Governance Structures

In moving EDSS forward as part of developing a comprehensive eHealth system, a nationally coordinated approach for EDSS is required. There is currently no coordinating organisation to support quality knowledge management and decision support systems. In the *AHIC Future Directions Briefing Paper* produced in October 2007, AHIC supported the concept of having a time limited function/ body to consider issues around eHealth and provide national coordination of shared learnings. Such a body may coordinate and commission further work in a variety of different areas, and it is recommended that EDSS should become one of priorities for such coordination.

Such an organisation could commission national expertise in the relevant area and engage consumers, clinicians and professional groups, software vendors, government and organisational users of decision support and producers of knowledge with a view to:

- having guidelines to assess applicability and rigour;
- identifying similar and different needs of stakeholders and the general or specific requirements for knowledge representation;
- providing a mechanism to measure and encourage quality, representative and useful knowledge;
- having the capacity to store and feed back knowledge that may not be global, i.e. that may be provider or patient specific;
- producing knowledge management process guidelines and encourage sharing of information; and
- using current projects and existing standards to develop national approaches and continual improvement.

6.3.2 Developing standards & accreditation processes

In addition to this national coordination, there is also a role for a reputable body, like the National Health and Medical Research Council (NHMRC) or the Australian Commission for Safety and Quality in Health Care to provide professional and clinical advice on standards operability, a framework for accreditation and the use of EDSS more generally. This agency could provide an administrative and regulatory function for some of the technical aspects of EDSS in Australia.

AHIC recommends that EDSS needs to be included in accreditation standards for general practice, aged care, acute care and other health care settings.

In considering this recommendation, AHIC further recommends that, once an appropriate framework is developed, existing infrastructure should be used where possible and that EDSS requirements should be introduced across the health system. Existing accreditation bodies such as the Australian Council on Healthcare Standards (ACHS) and Australian General Practice Accreditation Limited (AGPAL) should be funded to adapt ready-made products to include aspects of eHealth allowing a benchmark for health professionals and organisations to perform safely and effectively. This should be done in line with similar requirements for other more traditional therapeutic goods and may mean that existing accreditors work will need to develop their skills so they are able to adequately evaluate new eHealth standards and technology.

AHIC considers that one of the first responsibilities of any such agency would be the development of guidelines for the review of EDSS accreditation standards including who will conduct reviews, appropriate timeframes for review and processes for assuring the quality of data and information required. New information or evidence such as prescription guidelines or treatment approaches must be able to be integrated as they occur to ensure that there is a 'just in time' approach to diagnostic and treatment information.

Another important function will be consideration and development of standards to maximise the interoperability of EDSS, as well as standards that improve the likelihood that EDSS are safely engineered. The role of standards to allow for interchange of knowledge resources between EDSS should also be explored in the medium term.

As an initial step, benchmarks for practice could be established with the gradual phasing in of mandatory standards over the next 5 years. AHIC recommends that this step up approach could be reflected in the National E-Health Strategy implementation plan with appropriate phases articulated at critical points in time.

Recommendation Three:

AHIC recommends that a national governance and regulatory structure needs to be further considered for EDSS and that, as part of this structure, EDSS should be considered for future accreditation standards for general practice, aged care, acute care and other health care settings.

6.4 We need to Work with the Professions to Maximise Take-Up

AHIC considers that regulation is not only a role of jurisdictions across Australia but often industry self-regulation has demonstrated its importance in continuous quality improvement and change management.

AHIC recommends that both financial and non-financial incentives will need to be considered in order to maximise uptake. Incentives for the uptake of EDSS may be considered to be time-limited, and reward innovation and early adopters. This will be particularly critical in specialist practices which have not yet started to implement eHealth systems as has occurred in general practice.

AHIC also considered that a significant incentive for the up-take of EDSS across Australia could include identifying and promoting a range of non-financial incentives to health professionals. The timely feedback of clinician performance information, the redesign of work flow to reduce duplication and improve efficiency, and better informed patients are potential benefits that may influence EDSS use by health professionals. These need to be put to the professions and peak bodies and their advice sought on how EDSS can most effectively deliver these potential benefits.

In progressing EDSS in Australia, AHIC recommends the need to work with peak professional organisations to identify barriers and create incentives that will maximise uptake of EDSS and provide a degree of industry self-regulation where appropriate.

Recommendation Four:

AHIC recommends that in order to progress the national health information program, there is a need to work with the peak professional organisations to identify barriers and create incentives that will maximise uptake of EDSS.

6.5 Supporting an eHealth workforce

It is essential that eHealth systems such as EDSS start to be viewed as the way of doing business now and into the future and that they are seamlessly integrated into everyday business practices. In order for EDSS to be implemented effectively, the workforce needs to be supported to develop the necessary skills to use EDSS, as well as being supported to apply them in day to day settings through new processes/systems, clinical leadership and culture change.

Skills development needs to occur at the undergraduate level with the introduction of core competencies in eHealth, in formal post-graduate training programs, and on the job training and support.

Some of this work has recently been commissioned by the Commonwealth through the *Development of Health Informatics Competency Standards for the Nursing Workforce* project, but this support for our eHealth workforce needs to occur across jurisdictions with greater focus.

In some sectors of the health system, a culture exists that does not readily embrace technological achievements. Certain sectors such as general practice have integrated some systems into their work practices well, with others such as medical specialists requiring further support. Key champions or early adopters need to be identified, engaged and supported to help redefine the culture of practice.

Workforce shortages in health also need to be considered when planning how to better support the workforce to use EDSS systems. There is significant evidence that provides clear markers to anticipate where the workforce issues will arise and these issues must be identified and managed on a proactive basis. Education and training are key issues and in Australia we have a large deficiency in the area of health informatics that must be

addressed. The low up-take of electronic systems in medical specialties must also be a focus of early action.

In order to combat some of the workforce obstacles currently facing eHealth, AHIC recommends that one of the jointly funded initiatives that sit under the National E-Health Strategy should support health informatics knowledge provision and the development of eHealth competency standards and leadership.

Recommendation Five:

AHIC recommends that the health workforce be provided with the skills to use a range of eHealth initiatives, including EDSS.

6.6 Risks of not implementing a nationally coordinated and regulated EDSS

There are significant risks to the Australian eHealth system if EDSS is not implemented as part of a comprehensive eHealth system. Australia will get left behind as other similar countries pursue policies that provide support to their health professionals at the point of care delivery. This will not only have implications on the way that Australia provides health care but will reduce the attraction for clinicians, who are used to the benefits of EDSS systems in their clinical practice, to practise in Australia.

7. Guiding Principles

In developing this advice AHIC considered that, in order to progress EDSS in Australia, the following guiding principles need to underpin the recommendations.

In particular, when the process for initiating EDSS regulation commences, it is essential that health care consumers and health professionals are consulted. From that view point, consumers must be central to EDSS and EDSS regulation and benchmarks must be designed around the health professionals that use them so that the requirements are clearly articulated to support the user.

Guiding Principle One: Health professionals and consumers must be involved in the development of EDSS

A diverse range of stakeholders need to be considered in the more widespread implementation and use of national EDSS systems. General practitioners, specialists, pharmacists, nurses, allied health staff and other technical and non-technical staff can be users of EDSS. They are all involved in the continuum of health care and therefore must be involved in the development of EDSS.

AHIC considered advice from the literature overview that identified that expensive systems that fail to meet the needs of users do not help the causeⁱⁱ and often do more harm than good. In order to overcome this implementation risk, AHIC recommends that in progressing a nationally coordinated and regulated EDSS, we must work with the professional and peak bodies to ensure that user needs are met in practical and cost effective ways.

Health professionals are able to evaluate the relevance and useability of IT systems to their everyday practice, and identify opportunities for improvement. By including health professionals in the design stage of a national EDSS system, the practical useability of the EDSS can be enhanced with a result of increased uptake maximised.

Guiding Principle Two: EDSS must support effective consumer self-management and optimal health outcomes

Patients, their carers and families are consumers of health care services and health care information from a variety of sources such as the internet, call centres and in printed form. Consumers may access information about their conditions to inform themselves about treatment and management options and EDSS systems have started to become available to consumers through websites such as HealthInsiteⁱⁱⁱ.

Consumers have been very effective in driving change to make services more effective and appropriate and they must be part of the team in the future development of a national system of EDSS. The advantages of engaging consumers at every stage of the planning, design, implementation and review process is that the products and systems will be relevant to them and flexible enough to accommodate individual needs. The benefits to consumers must be highlighted and support must be given to them so they are able to effectively use EDSS.

Guiding Principle Three: We have a good foundation to progress EDSS; lets use it

There has been much work on EDSS already undertaken both within Australia and internationally. Australia currently leads the way in some of these areas and this work, together with products and systems developed overseas, should be used to create a foundation for progressing a nationally coordinated and regulated EDSS in Australia.

A good example of the work undertaken in Australia is that surrounding prescribing. As mentioned previously, electronic prescribing packages have been largely adopted by health professionals in Australia as a convenient and effective way of providing medication scripts at the point of care delivery. AHIC maintains that this good foundation in Australia should be built up and the wheel not re-invented.

Furthermore, AHIC's 2004 Guidelines on EDSS could also contribute to forming the basis of moving EDSS forward. The literature overview found that to date these guidelines appear to be current and valid with no substantial challenges to the assumptions or content appearing in the literature.

Other countries facing similar healthcare challenges to Australia have developed and implemented EDSS and are making their experience and knowledge freely available. Australia can benefit significantly by using the international experience to gain a running start and avoid the pitfalls other countries have experienced.

The United States, for example, have provided comprehensive strategies for development, implementation and accreditation of EDSS. Some of these, provided they were made relevant in the Australian context following an "Australianisation" process, could contribute to our thinking on this important component of a comprehensive eHealth system.

8. Members of the Australian Health Information Council

Member	Organisation
Professor James Angus (Chair)	Dean of the Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne
Ms Yvonne Allinson	Chief Executive Officer Society of Hospital Pharmacists of Australia
Professor Enrico Coiera	Director, Centre for Health Informatics, University of New South Wales
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Ms Fran Thorn	Chair of NEHIPC Secretary, Victorian Department of Human Services
Dr Peter Garcia-Webb	Australian Medical Association
Professor Nicholas Glasgow	Director, Australian Primary Health Research Institute
Ms Heather Grain	La Trobe School of Public Health
Ms Helen Hopkins	Executive Director, Consumers' Health Forum
Professor John Horvath	Chief Medical Officer, Australian Department of Health and Ageing
Professor Michael Kidd	Head, Discipline of General Practice The University of Sydney
Dr Ross Maxwell	Rural Doctors Association of Australia
Dr Louis Peachey	Medical Educator Mt Isa Centre for Rural and Remote Health
Dr Andrew Perrignon	Chief Executive Officer, Northern Health
Ms Rosemary Sinclair	Managing Director, Australian Telecommunications Users Group

*I would like to acknowledge the contribution of Dr Moya Conrick from the Australian Nursing Federation who passed away earlier this year. Dr Conrick was a valued professional in the health and nursing informatics area and made important contributions in the broader eHealth arena. We appreciated her knowledgeable input as a member of the Australian Health Information Council. Dr Conrick will be deeply missed.

9. END NOTES

ⁱ *Electronic Decision Support for Australia's Health Sector*. National Electronic Decision Support Taskforce Canberra: Australian Government Department of Health and Ageing, 2003.

ⁱⁱ Hannan, T. Informatique médicale (medical informatics). RACP News. 2008 February.

ⁱⁱⁱ <http://www.healthinsite.gov.au/>